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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/697,105

10/31/2003

Yasunaga Miyazawa

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EXAMINER

LEE, GINA W

ART UNIT

PAPER NUMBER

2609

MAIL DATE

DELIVERY MODE

05/29/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/697,105

Applicant(s)

MIYAZAWA, YASUNAGA

Examiner

Gina W. Lee

Art Unit

2609

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 10/31/03
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Deng et al. (US 6,876,966).

4. With respect to independent **claim 1**, Deng teaches an acoustic model creation method comprising:

collecting various types of noise collectable within the space having noise (column 6, lines 40-44, noise is recorded from selected noisy environments);

creating plural types of noise data by classifying the noise collected (column 11, lines 2-13, each set of noise training data is associated with a different type of noise);

creating plural types of noise-superposed speech data by superposing the plural types of noise data on standard speech data (figure 8, column 6, lines 32-44, noise is added to the “clean” speech signals);

Art Unit: 2609

creating plural types of noise-removed speech data by performing a noise removal process on the plural types of noise-superposed speech data (figure 3, column 6, lines 45-47, noise reduction module applies one or more noise reduction techniques to the noise training data (302));

and creating plural types of acoustic models using the plural types of noise-removed speech data (column 6, lines 53-64, acoustic model is trained with “pseudoclean” training data (304); column 12, lines 36-48, different sets of data are used to train multiple acoustic models).

5. With respect to **claims 2 and 8**, Deng teaches that the noise removal process performed on the plural types of noise-superposed speech data is carried out using a noise removal method suitable for each of the noise data (column 11, lines 2-6, the noise reduction techniques applied to the training data can be the same for each type of noisy environment or may be tailored for the specific noise environment).

6. With respect to **claims 3 and 9**, Deng teaches that the space having noise is a vehicle (column 6, line 37, noisy environment may be a car).

7. With respect to **claims 4 and 10**, Deng teaches that types of noise include noise due to effects of at least one of weather conditions, a traveling state of the vehicle, a traveling location of the vehicle, and an operational state of apparatuses mounted in the vehicle (column 11, lines 7-13, an example of a type of noise is air-conditioning noise, which would be due to an apparatus mounted in the vehicle).

8. With respect to **claims 5 and 11**, Deng teaches:

collecting noise comprising a recording step of recording individual noise parameters corresponding to the plural types of noise to be collected (column 6, lines 39-44, noise is recorded; column 10, line 57, multiple sets of training data are used; column 11, lines 9-11, each set of training data is associated with a different type of noise),

and the plural types of noise to be collected being classified using each noise parameter corresponding to the plural types of noise to be collected, thereby creating the plural types of noise data (column 11, lines 9-11, each set of training data is associated with a different type of noise).

9. With respect to independent **claims 6 and 13**, Deng teaches a speech recognition apparatus for performing speech recognition within a space having noise, the apparatus comprising:

a sound input device that inputs speech to be recognized and other noise (figure 4, column 7, lines 17-19, microphone (404) inputs speech signal and additive noise);

plural types of acoustic models created by the acoustic model creating method of claim 1 (figure 4, acoustic model (418); column 12, lines 36-48, multiple acoustic models may be used. The method of model creation has been addressed in the discussion of claim 1.),

a noise data determination device that determines which noise data of the plural types of noise data corresponds to the noise inputted from the sound input device (figure 13, column 12,

Art Unit: 2609

lines 6-16, noise comparator (1302) compares the noise in the signal to training noise stored in memory);

a noise removal processing device that performs noise removal on the noise-superposed speech data on which the noise inputted from the sound input device are superposed based on the result of the determination of the noise data determination device (figure 13, column 12, lines 17-35, noise reduction module (1306, 1308, or 1310) applies noise reduction technique);

and a speech recognition device that performs speech recognition on the noise-removed speech data (figure 4, column 7, lines 57-60 and column 8, lines 47-63, decoder (412) identifies the most likely sequence of words).

10. With respect to **claim 7**, Deng teaches a noise parameter acquisition device that acquires noise parameters corresponding to the noise inputted from the sound input device (figure 13, column 12, lines 7-9, noise comparator (1302) uses the spectral content of the noise in identification of the noise).

11. With respect to **claim 12**, Deng teaches the same noise removal process being used at the time of creating the plural types of acoustic models and at the time of performing speech recognition (figure 3, column 6, line 66 to column 7, line 3, the same noise reduction techniques that were applied to the noisy training data are then applied to the test data (308); figure 13, column 12, lines 17-28, for multiple types of noise, noise is identified and the same noise reduction techniques that were applied to the training data are applied to the test data).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kishi et al. (US 4,501,012) in view of Deng et al. (US 6,876,966).

14. With respect to **claim 14**, Kishi discloses a speech recognition system for an automotive vehicle but does not specifically teach the speech recognition apparatus of claim 6 of this application. Instead, Kishi makes mention of a “typical speech recognizer.”

Deng teaches the speech recognition apparatus of claim 6, as addressed above in the discussion of claim 6. Deng does not explicitly teach the placement of the speech recognition apparatus in a vehicle, but does identify a car and an airplane as possible noisy environments where the apparatus may be used (column 10, lines 61-62).

As Kishi does not limit the type of speech recognition apparatus that may be used in the vehicle, and as Deng teaches vehicles as environments where a speech recognition apparatus may be used, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Kishi’s vehicular speech recognition system with the speech recognition apparatus of Deng. Deng’s speech recognition apparatus uses the method of training speech models by inserting noise followed by noise reduction and would afford more precision and accuracy than a generic speech recognition device because these models more closely match the testing data than other systems (column 1, lines 35-64).

Double Patenting

15. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

16. **Claims 1 and 2** are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 4 of U.S. Patent No. 7,065,487. Although the conflicting claims are not identical, they are not patentably distinct from each other because although claim 4 of the Patent does not specifically claim collecting various types of noise and classifying types of noise data, it would have been obvious to one of ordinary skill in the art at the time the invention was made that before generating the speech data on which noise data is superposed with a plurality of various S/N ratios corresponding to different noise types, these various types of noise must have been collected in some manner and distinguished from each other.

Art Unit: 2609

17. Similarly, **claims 6-8 and 11-13** are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 29, 30, and 32 of U.S. Patent No. 7,065,487. Although the conflicting claims are not identical, they are not patentably distinct from each other because although claim 29 of the patent does not claim a sound input device that inputs speech and other noise, it would also have been obvious to one of ordinary skill in the art at the time the invention was made that any speech recognition apparatus needs to have a sound input device in order to make it useful and functional. Also, while the method of creating acoustic models is irrelevant to the practice of the claimed apparatus, it has been shown above that they are not patentably distinct from each other.

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yoshikawa et al. (US 7,209,881) discloses a method of preparing acoustic models with noise-super-imposed speech data.

Suzuki (US 5,749,068) discloses a speech recognition apparatus and method using a noise-superimposed model.

Yamada et al. (US 6,842,734) discloses a method and apparatus for producing acoustic models using a plurality of categorized noise samples.

Goldberg et al. (US 5,970,446) discloses an apparatus and method for speech recognition using background noise models.

Art Unit: 2609

Hermansen (US 6,510,408) discloses a method and apparatus for noise reduction by spectral subtraction.

Lee et al. (US 2002/0087306) discloses a system and method for speech recognition using noise acoustic profiles for specific environments.

Rahim (US 5,960,397) discloses a system and method for speech recognition in multiple acoustic environments using multiple acoustic models.

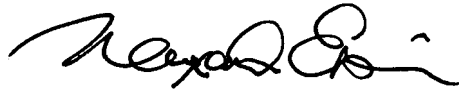
Fischer et al. (US 2006/0173684) discloses a system and method for speech recognition by recognizing speech and noise from specific sources and selecting the best corresponding models.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gina W. Lee whose telephone number is (571) 270-3139. The examiner can normally be reached on Monday to Thursday, 6:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexander Eisen can be reached on (571) 272-2687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2609

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Alexander Eisen', with a stylized flourish at the end.

Alexander Eisen
SPE
Art Unit 2609

GWL